

REMARKS

Consideration of the above-identified application in view of the present amendment is respectfully requested.

By the present amendment, claims 1, 4, 6, 10, and 12 have been amended and new claims 21 and 22 have been added. Claims 1-22 are pending in the application.

In the Office Action, claims 1-20 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. More specifically, the Office Action stated that the specification was not enabling in regard to the predetermined thickness and predetermined pressure elements recited in claim 1. The Examiner also posed several questions relating to the computer generated modeling (e.g., temperature conditions, statistical modeling, error and r-squared values) used to develop the claimed equations for determining pressure as a function of thickness.

In order to practice the present invention, one needs to provide a side curtain having a known thickness and inflate the curtain to a pressure determined using either of the equations taught by the present invention. Using the disclosed equations involves routine and straight forward mathematical operations. Once the predetermined pressure is determined, selecting the appropriate inflator, i.e., one providing the appropriate mass flow rate, volume, pressure, etc., involves only routine skill in the art. One having

ordinary skill in the art would certainly be capable of performing these tasks.

In determining whether a written description is enabling, the invention that must be enabled is that defined by the particular claim or claims of the patent application.

*Phillips Petroleum Co. v. U.S. Steel Corp.*, 673 F.Supp. 1278, 6 USPQ2d 1065 (D. Del. 1987), *aff'd*, 865 F. 2d 1247, 9 USPQ2d 1461 (Fed. Cir. 1989). The relevant inquiry may be summed up as being whether the scope of enablement provided to one of ordinary skill in the art by the disclosure is such as to be commensurate with the scope of protection sought by the claims. *In re Moore*, 439 F.2d 1232, 169 USPQ 236 (C.C.P.A. 1971). The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988).

As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. §112 is satisfied. *In re Fisher*, 427 F.2d 833, 839, 166 USPQ2d 1737, 1743 (Fed. Cir.), *cert. Denied*, 484 U.S. 954 (1987). A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991).

Claim 1 recites an apparatus including an inflatable, vehicle occupant protection device comprising overlying panels, wherein the protection device, when inflated, has a predetermined thickness measured between points on the panels where an occupant's head may strike the curtain. Claim 1 further recites that the apparatus includes an inflation fluid source for providing inflation fluid for inflating the protection device to a predetermined pressure. The predetermined pressure is determined as a function of the predetermined thickness of the protection device. The predetermined pressure is sufficient to prevent the head of the occupant travelling at a predetermined velocity from striking the side structure through the predetermined thickness of the inflatable vehicle occupant protection device.

One having ordinary skill in the art could make and use the apparatus recited in claim 1 using the disclosure in the specification coupled with information known in the art without undue experimentation. The predetermined thickness of the inflatable vehicle occupant protection device is illustrated clearly in Fig. 3 and described in the specification on pages 10 and 11. The specification discloses that the thickness of the curtain is measured between points on the opposing panels where an occupant's head may contact the curtain while the curtain is inflated. This thickness is clearly identified at "T" in Fig. 3. Based on this disclosure, one having ordinary skill in the art could easily make or use an inflatable vehicle occupant protection device

having a predetermined thickness as recited in claim 1 without undue experimentation. The specification is thus enabling in accordance with 35 U.S.C. §112, first paragraph, in regard to the predetermined thickness element recited in claim 1.

The inflatable device is inflated to the predetermined pressure when the protection device is in the inflated condition illustrated in Figs. 2 and 3. The specification states that the inflatable curtain, when inflated to the desired thickness "T" illustrated in Fig. 3, requires the predetermined inflation fluid pressure. The predetermined pressure is disclosed in the specification as being sufficient to prevent the occupant's head from striking the side structure of the vehicle through the inflatable device, given the predetermined thickness of the device. (See generally pages 11 and 12). The specification provides specific formulae for determining this pressure as a function of the predetermined thickness. Based on this disclosure, one having ordinary skill in the art could easily make or use an inflatable vehicle occupant protection device inflatable to a predetermined pressure as recited in claim 1 without undue experimentation. The specification is thus enabling in accordance with 35 U.S.C. §112, first paragraph, in regard to the predetermined pressure element recited in claim 1.

As stated above, the law requires enablement with regard to the invention as claimed. Regarding the questions relating to the computer generated modeling (e.g., the particular model used, temperature conditions, statistical modeling, error and r-squared values), none of these items are claimed in the

present invention. More importantly, none of this information would be required by one reasonably skilled in the art in order to make or use the claimed invention.

According to the present invention, in order to make and use the present invention, all one has to do is provide an inflatable device that is inflated to a predetermined pressure based on a predetermined thickness of the device. This predetermined pressure is determined using the disclosed equations, which are described in the specification in clear and concise terms. The specification teaches where and when the thickness is measured, and how the formulae are applied to determine the inflation pressure. Simply put, one having ordinary skill in the art, based on the written description coupled with information known in the art could make and use the claimed invention without undue experimentation. This is all that the law requires.

For the reasons stated above, it is respectfully submitted that the specification is enabling in accordance with 35 U.S.C. §112, first paragraph. Therefore, the rejection of claims 1-20 under 35 U.S.C. 112, first paragraph, is improper and should be withdrawn.

In the Office Action, claims 1-20 were also rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In rejecting a claim under 35 U.S.C. §112, second paragraph, it is incumbent on the examiner to establish that one of ordinary skill in the pertinent art, when reading the

claims in light of the supporting specification, would not have been able to ascertain with a reasonable degree of precision and particularity the particular area set out and circumscribed by the claims. *Ex parte Wu*, 10 USPQ2d 2031, 2033, (B.P.A.I. 1989), citing *In re Moore*, 439 F.2d 1232, 169 USPQ 236 (C.C.P.A. 1971). The essential inquiry is whether the claims set out and circumscribe the subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of the content of the particular application disclosure, the teachings of the prior art, and the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. See M.P.E.P. §2173.02.

During patent examination, the pending claims must be given the broadest reasonable interpretation consistent with the specification. *In re Prater*, 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969). When the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. *In re Zletz*, 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989).

The Office Action states that the scope of claim 1 is unclear because there is insufficient disclosure to understand what is meant by "predetermined pressure" and at what time after inflation is initiated should the pressure be considered. Claim 1 recites that the protection device is

pressurized to a predetermined pressure *when the protection device is inflated*. The inflated condition is illustrated in Figs. 2 and 3. The specification explicitly states that the inflatable curtain, when inflated to the desired thickness illustrated at "T" in Fig. 3, requires the predetermined inflation fluid pressure. Clearly, one having ordinary skill in the art would recognize that the predetermined pressure is required when the curtain is in the inflated position of Figs. 2 and 3. Therefore, it is submitted that the predetermined pressure set forth in claim 1 is definite within the meaning of 35 U.S.C. §112, second paragraph.

The Office Action also stated that claim 1 recites a functional limitation that can be construed as a restatement of the Ideal Gas Law. As amended, claim 1 recites that the predetermined pressure is sufficient to prevent the head of the occupant travelling at a predetermined velocity from striking the side structure through said predetermined thickness of said inflatable vehicle occupant protection device. Claim 1, as amended, clearly recites that the predetermined pressure is determined as a function of the predetermined thickness so that the occupant's head will not strike the side structure through the inflatable vehicle occupant protection device. Claim 1 thus recites an inflatable device having characteristics, i.e., a predetermined thickness and pressure, sufficient to provide a desired function, i.e., preventing the occupant's head from striking the side structure through the inflatable device. This is not a restatement of the Ideal Gas Law.

The Office Action also stated that claim 1 appears to be a combination of an apparatus claim and a method claim. Applicants disagree and submit that claim 1 is a proper apparatus claim. Claim 1 recites an inflatable vehicle occupant protection device having a predetermined thickness and pressure when inflated, the predetermined pressure being determined as a function of the predetermined thickness and being sufficient to prevent the occupant's head from striking the side structure through the inflatable vehicle occupant protection device. These are not method limitations but, rather, limitations which help define the structure of the claimed apparatus. ...

The Office Action also stated that, regarding claims 2 and 8, it is not clear if the pressure is absolute or gauge. The tables on pages 12 and 15 of the specification illustrate the curtain thickness and the associated required pressure. As shown in the table beginning on page 12, a curtain thickness of 107 millimeters requires a pressure of 99 kPa, a curtain thickness of 110 millimeters requires a pressure of 81 kPa, and so forth to a curtain thickness of 200 millimeters, which requires an inflation pressure of 8.5 kPa. It is a well known fact that atmospheric pressure is about 101 kPa. This being the case, if the pressures referred to in the present invention were absolute, the pressures corresponding to thicknesses at or above 107 millimeters in the table of page 12 would be a vacuum. This clearly is not the case. One having ordinary skill in the art would recognize that the present invention does not contemplate placing the inflatable



curtain under a vacuum. Thus, one having ordinary skill in the art would recognize that the pressures referred to in the present invention are gauge pressures.

The Office Action also states that it is not clear whether there is a one-to-one correspondence between the ranges recited in claims 4, 6, 10, and 12 and the ranges recited in claims 3, 5, 9, and 11, respectively, from which they depend. By the present amendment, claims 4 and 6 have been amended to depend from claim 2, and claims 10 and 12 have been amended to depend from claim 8. This removes any uncertainty as to whether there is meant to be a one-to-one correspondence between the respective curtain thicknesses and pressures.

For the reasons stated above, it is respectfully submitted that the rejection of claims 1-20 under 35 U.S.C. 112, second paragraph, is improper and should be withdrawn.

In the Office Action, claims 1, 14-18, 19, and 20 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,022,044 to Cherry.

Anticipation requires a single prior art reference that discloses each element of the claim. *W.L. Gore & Associates v. Garlock, Inc.*, 220 USPQ 303, 313 (Fed. Cir. 1983) cert. denied 469 U.S. 851 (1984). For a reference to anticipate a claim, "[t]here must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991).

As amended, claim 1 recites that the inflatable vehicle occupant protection device comprising overlying panels and having a predetermined thickness measured between overlying points on the panels at a location where the head of an occupant may contact the protection device. An inflation fluid source provides inflation fluid for inflating and pressurizing the inflatable device to a predetermined pressure. The predetermined pressure is determined as a function of the predetermined thickness to be sufficient to prevent the head of the occupant travelling at a predetermined velocity from striking the side structure of the vehicle through the predetermined thickness of the inflatable device.

It is respectfully submitted that Cherry does not disclose each element recited in claim 1. Specifically, Cherry does not teach an inflatable device inflated to a predetermined pressure determined as a function of a predetermined thickness of the device so as to prevent an occupant's head travelling at a predetermined velocity from striking the side structure of the vehicle through the predetermined thickness of the inflatable device. Cherry does not disclose any relationship between pressurization and thickness of the inflatable device when inflated and an occupant's head striking through the curtain. Cherry does not anticipate claims 1, 14-18, 19, and 20 and, therefore, the rejection under 35 U.S.C. §102(e) should be withdrawn.

In the Office Action, claims 1-6, 8-12, and 14-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Cherry in view of U.S. Patent No. 6,260,878 to Tanase, U.S.

Patent No. 5,662,354 to Ellerbok, U.S. Patent No. 5,788,270 to Haland et al., and U.S. Patent No. 5,775,726 to Timothy et al.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Regarding claim 1, the prior art references, alone or in combination, do not teach or suggest an inflatable device inflated to a predetermined pressure determined as a function of a predetermined thickness of the device so as to prevent an occupant's head travelling at a predetermined velocity from striking the side structure of the vehicle through the predetermined thickness of the inflatable device. Contrary to that which is stated in the Office Action, neither Tanase, Ellerbrock, nor Haland et al. teach an inflation pressure determined as a function of a predetermined thickness. Tanase and Ellerbrock do not mention any thickness associated with the inflation pressure of their respective inflatable devices when inflated.

Haland et al. discloses an inflation pressure of 3 bar (300 kPa) for an air bag having a thickness of 30-40 mm. This

arrangement is explicitly set forth as an unacceptable configuration in both embodiments of the present invention. As stated on page 14, lines 8-20, an inflatable device having a thickness of 100-150 millimeters, which corresponds to inflation pressures of 30-110 kPa, is within an acceptable range according to the first embodiment of the present invention. As stated on page 17, lines 1-12, an inflatable device having a thickness of 100-150 millimeters, which corresponds to inflation pressures of 13-43 kPa, is within an acceptable range according to the first embodiment of the present invention. The thickness (30-40 mm) and the pressure (300 kPa) disclosed in Haland et al. fall outside the acceptable ranges disclosed in both embodiments of the present invention. Furthermore, according to the present invention, an inflatable device having the thickness disclosed in Haland et al. (30-40 mm) would require an inflation pressure in excess of 400 kPa (4 bar) in order to prevent the occupant's head from striking the side structure through the thickness of the inflatable device (see table on page 12). Since Haland et al. discloses a pressure of 300 kPa for the inflatable device, the device would not prevent the occupant's head from striking the side structure through the inflated device.

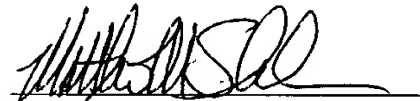
The Office Action also cited Timothy et al. as teaching a thickness of 50-200 mm. Timothy et al., however, is directed towards an inflatable headliner and does not teach or suggest an inflatable device inflatable between the side structure of the vehicle and a vehicle occupant as recited in claim 1. Timothy et al. also does not teach or suggest an inflatable

Attached is a marked-up version of the amended claims presented in this Amendment. The attached page is captioned "Version With Markings To Show Changes Made."

In view of the foregoing, it is respectfully submitted that the above identified application is in condition for allowance, and allowance of the above-identified application is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,



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device inflated to a predetermined pressure determined as a function of a predetermined thickness of the device so as to prevent an occupant's head travelling at a predetermined velocity from striking the side structure of the vehicle through the predetermined thickness of the inflatable device.

The Examiner also takes Official Notice that the computer modeling is well within the level of ordinary skill in the art states that it would be obvious to use computer modeling to derive a specific relationship between pressure and thickness in an inflatable device. Applicants respectfully disagree. While computer modeling may, in fact, be well known, none of the prior art references teach or suggest using this modeling to determine pressure as a function of thickness so as to prevent an occupant's head from striking the side structure through the inflatable device. In fact, none of the prior art references disclose this "strike through" criteria at all. In fact, as stated above, in the only cited reference that discloses an inflation pressure corresponding to an inflated thickness (i.e., Haland et al), strike through would in fact occur.

Finally, the Office Action states that the equations disclosed and claimed in the present invention are obvious because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980). In *Boesch*, however, the court held this to be the case only where the process is a known process. *Id.* at 205. As stated above, none of the prior art cited in the Office Action

teaches or suggests determining an inflation pressure for an inflatable device as a function of the thickness of the device such that an occupant's head is prevented from striking the side structure through the inflated thickness of the device. This is not the mere optimization of a result effective variable in a known process. This is a functional relationship that provides a desired characteristic, i.e., non-strike through, which is not taught or suggested in the prior art.

For the reasons stated above, it is respectfully submitted that the prior art references cited in the Office Action do not teach or suggest the each element recited in amended claim 1. Therefore, the rejection of claim 1 should be withdrawn and claim 1 should be indicated as allowable. Claims 2-20 depend either directly or indirectly from claim 1 and are therefore allowable as depending from an allowable claim.

Regarding claims 2 and 8, none of the prior art references cited in the Office Action teach or suggest the equations recited therein. Therefore, the rejection of claims 2 and 8 should be withdrawn and claims 2 and 8 should be indicated as allowable for the specific features recited therein.

Regarding new claims 21 and 22, none of the prior art references cited in the Office Action teach or suggest the recited predetermined velocities. Therefore, claims 21 and 22 should be indicated as allowable.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1, 4, 6, 10, and 12 have been amended as follows:

1. (Amended) Apparatus for helping to protect an occupant of a vehicle that has a side structure and a roof, said apparatus comprising:

an inflatable vehicle occupant protection device that is inflatable in a direction away from the vehicle roof into a position between the side structure of the vehicle and a vehicle occupant, said inflatable vehicle occupant protection device comprising overlying panels that are interconnected along at least a portion of a perimeter of said inflatable vehicle occupant protection device to define an inflatable volume of said inflatable vehicle occupant protection device, said inflatable vehicle occupant protection device when inflated having a predetermined thickness measured between overlying points on said overlying panels at a location where the head of an occupant may contact said inflatable vehicle occupant protection device; and

an inflation fluid source that provides inflation fluid to said inflatable volume for inflating said inflatable vehicle occupant protection device, said inflation fluid in said inflatable vehicle occupant protection device being pressurized to a predetermined pressure when said inflatable vehicle occupant protection device is inflated, said predetermined pressure being determined as a function of said predetermined thickness of said inflatable vehicle occupant



protection device, said predetermined pressure being  
sufficient to prevent the head of the occupant travelling at a  
predetermined velocity from striking the side structure  
through said predetermined thickness of said inflatable  
vehicle occupant protection device.

4. (Amended) Apparatus as defined in ~~claim 3~~ claim 2,  
wherein said predetermined pressure is between 30-110  
kilopascals.

6. (Amended) Apparatus as defined in ~~claim 5~~ claim 2,  
wherein said predetermined pressure is between 30-65  
kilopascals.

10. (Amended) Apparatus as defined in ~~claim 9~~ claim 8,  
wherein said predetermined pressure is between 13-43  
kilopascals.

12. (Amended) Apparatus as defined in ~~claim 11~~ claim 8,  
wherein said predetermined pressure is between 13-20  
kilopascals.